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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/736,922	12/16/2003	Di Wei	60246-223; 10,692	5821
26096	7590	02/16/2006	EXAMINER	
CARLSON, GASKEY & OLDS, P.C. 400 WEST MAPLE ROAD SUITE 350 BIRMINGHAM, MI 48009			MAYEKAR, KISHOR	
			ART UNIT	PAPER NUMBER
			1753	

DATE MAILED: 02/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/736,922

Applicant(s)

WEI ET AL.

Examiner

Kishor Mayekar

Art Unit

1753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 November 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 11/05.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Claim Objections*

1. Claim 42 is objected to because of the extra punctuation at the end of the claim. Appropriate correction is required.

### *Claim Rejections - 35 USC § 112*

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
3. Claims 34, 41 and 42 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention. The specifications fails to describe the variable  $x$  in  $Mn_xO_2$ .
4. Claims 34, 41 and 42 are rejected under 35 U.S.C. 112, second paragraph, as

being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In claim 34, the variable  $x$  in  $Mn_xO_2$  is not defined.

In claim 41, the same is applied to claim 34.

In claim 42, the same is applied to claim 34.

*Claim Rejections - 35 USC § 103*

5. Claims 1-28 and 31-33 stand and new claims 34-44 are rejected under 35 U.S.C. 103(a) as being unpatentable over Reisfeld et al. (US 2003/0021720 A1) in view of Kobayashi (US 6,368,668 B1) and/or Hemme et al. (US 6,627,173 B2), for reasons as of record.

As to the subject matter of each of claims 35, 37, 39 and 44, Reisfeld discloses it in paragraph [0020].

As to the subject matter of each of claims 36, 38, 40 and 43, since Kobayashi shows that the photocatalyst composition may further comprise a metal such as gold as one of the preferred metal to form a layer (col. 5, lines 53-67) and the metal is supported on the surface of the photocatalytic metal oxide (col. 6, lines 12-14), Kobayashi's layer is equivalent to the thermocatalytic layer disclosed

in the specification in paragraph [38] and inherently possesses the recited property.

6. Claims 29 and 30 stand rejected under 35 U.S.C. 103(a) as being unpatentable over Reisfeld '720 as modified by Kobayashi '668 and/o Hemme '173 as applied to claims 1-28 and 31-44 above, and further in view of Hirano et al. (US 2003/0050196 A1), for reasons as of record.

#### *Response to Arguments*

7. Applicant's arguments filed November 25, 2005 have been fully considered but they are not persuasive.

In response to Applicant's argument that the specification is enabling to the variable  $x$  as the variable is the number of atoms of manganese in the compound, and one skilled in the art would understand this, this is found unpersuasive. It is because it is clear in the case when  $x$  is 1 to form  $\text{MnO}_2$ , however the specification describes  $x$  as a variable, that is  $x$  can be more than one number, whether the number is an integer or a fraction. As such the specification is not enabling to the variable  $x$ . If it is still not clear to Applicant, take the case when one skilled in the

art would like to include carbon monoxide or carbon dioxide in a material one would denote the material containing at least one of  $CO_x$  where  $x$  is equal to 1 or 2. On the other hand if one would like to include only carbon monoxide in a material, one would clearly state the material containing  $CO$ .

To the argument that the claimed invention is not obvious since there is no suggestion in Kobayashi to employ any specific layers in any specific order, the claimed layers in the claimed order provide benefits that would not be obtained by generally and randomly applying layers on a substrate as disclosed in Kobayashi, the examiner finds this is also unpersuasive. First, the specification discloses that contaminants that are not reacted with the first layer diffuse through the first layer and adsorb on the second layer under the first layer and that contaminants that are not reacted with the second layer diffuse through the second layer and adsorb on the third layer under the second layer, and so on. As such, the specification discloses each of the applying layers is used to adsorb each of specific contaminants and each of the specific contaminants is able to diffuse through each of the layers. And the specification does not disclose the benefits of arranging each of the layers in the specific order such as why each of the specific contaminants needs to be adsorbed first in the arranged first layer and

the effect of each of the specific contaminants if it is not adsorb first on the first applying layer to other arranged layers under the first arranged layers as compared to generally and randomly applying layers such as by Kobayashi. As such, each of the specific contaminants can be adsorbed through each of the generally and randomly applying layers and the claimed invention is obvious over the prior art's teachings. Further, "rearrangement of parts was held to have been obvious". In re Japikse 124 USPQ 70.

To the argument that there is no suggestion in any of the references the use of three substrates with different coatings as claimed in claims 21 to 32, since Reisfeld discloses in Fig. 1 three filter elements each including a [photo]catalytic coating thereon and in paragraph [0024] that any suitable [photo]catalytic coating may be disposed thereon and since Kobayashi shows that photocatalytic coating with metal and/or metal oxide thereon enhances the function efficiency of the coating to contaminants, one skilled in the art would provide each of Reisfeld's substrates with a different coating to increase the photocatalytic oxidation.

To the argument that Hemme does not disclose layered catalytic coating, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642

F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986). The same is applied to the rejection of claims 29 and 30.

### *Conclusion*

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

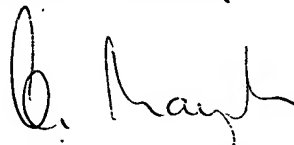
A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.



9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kishor Mayekar whose telephone number is (571) 272-1339. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kishor Mayekar  
Primary Examiner  
Art Unit 1753